Reports File
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GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF RESEARCH ADMINISTRATION

RESEARCH PROJECT INITIATION

Date: 24 May 1973

Project Title: "Undergraduate Research Participation"

Project No: G-33-513

Principal Investigator Dr. C. L. Liotta

Sponsor: National Science Foundation

Agreement Period: From June 1, 1973 Until May 31, 1974

Type Agreement: Grant No. GY-10577

Amount: $14,080

Reports Required: Final Report

Sponsor Contact Person (s):

W. W. Bolton
Grants Officer
National Science Foundation
Washington, D. C.20550

Assigned to: School of Chemistry

COPIES TO:

Principal Investigator	Library
School Director	Rich Electronic Computer Center
Dean of the College	Photographic Laboratory
Director, Research Administration	Project File
Director, Financial Affairs (2)	
Security-Reports-Property Office	
Patent Coordinator	Other

RA—3 (6—71)

Reports Posted 9/26

GEORGIA INSTITUTE OF TECHNOLOGY

OFFICE OF RESEARCH ADMINISTRATION

Sponsored Instruction
~~RESEARCH~~ PROJECT TERMINATION

Date: September 26, 1974

Project Title: Undergraduate Research Participation

Project No: G-33-513

Principal Investigator: Dr. L. H. Zalkow (formerly Dr. C. L. Liotta)

Sponsor: National Science Foundation

Effective Termination Date: ~~5-31-74 (Grant Expiration)~~

Clearance of Accounting Charges: by 5-31-74

Grant Closeout Actions Remaining: Supply ORA two record copies of Final Report
Final Fiscal Report (Office of Financial Affairs)

Assigned to School of Chemistry

COPIES TO:

Principal Investigator
School Director
Dean of the College
Director of Research Administration
Associate Controller (2)
Security-Reports-Property Office
Patent and Inventions Coordinator
Library, Technical Reports Section
Rich Electronic Computer Center
Photographic Laboratory
Terminated Project File No. _____
Other _____

RA-4 (5/70)

File: G-33-513

October 17, 1973

AIR MAIL

Dr. Leo A. Sciuchetti, Program Manager
Student-Oriented Programs
Education Directorate
Office of Experimental Projects and Programs
National Science Foundation
Washington, D. C. 20550

Subject: GY-10577 - "Undergraduate Research Participation"

Dear Dr. Sciuchetti:

I am enclosing the "Participant Information Sheets" and, in addition, enclosed you will find a tabulation of the supervisor comments which I distributed to our faculty participants for their enlightenment. Needless to say, we all feel this is a superb program and shall be very sad if it is not continued.

I have just learned that our accounting office requires permission from NSF in order to pay for a piece of equipment purchased for this project which was used during the program and is still being used by the undergraduate who participated in the program. Specifically we are requesting the transfer of $309.13 from operation and supplies to equipment for the purchase of a constant temperature bath.

We look forward to your visiting us again. Best personal regards.

Sincerely,

Leon H. Zalkow
Professor

LHZ:eb
Enclosures

Budget Bureau No. 99RO128
Approval Expires June 1973

Undergraduate Student Program

PARTICIPANT INFORMATION SHEET

Participant: Answer questions 1 through 22. If "none" is the appropriate answer to any question please indicate "none"

Supervisor: Complete item 23 and submit all forms to project director for checking and submission to National Science Foundation.

PROPOSAL NO. _____ GRANT NO. _____

DATE

1. DATE OF BIRTH (month, day, year)

2. SOCIAL SECURITY NO.

3. SEX ☐ MALE ☐ FEMALE

4. MARITAL STATUS ☐ MARRIED ☐ SINGLE

5. NAME (first, middle, maiden, last)

6. ADDRESS OF PERMANENT RESIDENCE (not school address)

7. NAME OF SPONSORING INSTITUTION AND PROJECT DIRECTOR

8. DEPARTMENT IN WHICH ACTIVITY IS PERFORMED

9. NAME OF INSTITUTION IN WHICH YOU WERE ENROLLED DURING PREVIOUS ACADEMIC YEAR (for summer participants) OR CURRENT ENROLLMENT (for academic year participants)

10. IF ACTIVITY IS NOT PERFORMED AT INSTITUTION AND DEPARTMENT IN ITEMS 7 and 8, GIVE PROJECT LOCATION.

11. NAME OF FACULTY MEMBER SUPERVISING YOUR ACTIVITY IN THIS PROGRAM

12. WHAT CLASS WERE YOU IN ON MAY 1, 19____?
☐ FRESHMAN ☐ SOPHOMORE
☐ JUNIOR ☐ SENIOR ☐ OTHER _____

13. WHEN DO YOU EXPECT TO RECEIVE YOUR DEGREE (month, year)?

WHICH DEGREE?

14. WHAT IS YOUR MAJOR FIELD?

15. WHAT IS YOUR MINOR FIELD?

16. HISTORY OF PARTICIPATION IN NSF-SUPPORTED UNDERGRADUATE RESEARCH PARTICIPATION AND INDEPENDENT STUDY ACTIVITIES. (Please check YOUR PARTICIPATION EACH PERIOD whether stipend support was provided or not.) IF NO STIPEND WAS PROVIDED PLEASE WRITE "NONE".

☐ SUMMER, 1972	$	$	☐ SUMMER, 1974	$	$
☐ FALL TERM, 1972 ☐ WINTER TERM, 1973 ☐ SPRING TERM, 1973	$	$	☐ FALL TERM, 1974 ☐ WINTER TERM, 1975 ☐ SPRING TERM, 1975	$	$
☐ SUMMER, 1973	$	$	☐ SUMMER, 1975	$	$
☐ FALL TERM, 1973 ☐ WINTER TERM, 1974 ☐ SPRING TERM, 1974	$	$	☐ FALL TERM, 1975 ☐ WINTER TERM, 1976 ☐ SPRING TERM, 1976	$	$

Note: Place asterisk after appropriate time if "short term" project.

17. OTHER NSF PROGRAMS IN WHICH YOU HAVE PARTICIPATED (indicate program, sponsoring institution, location and dates)

18. PLANS AFTER GRADUATION
☐ UNDECIDED ☐ ENTER GRADUATE OR PROFESSIONAL SCHOOL FOLLOWING GRADUATION. ☐ ENTER GRADUATE OR PROFESSIONAL SCHOOL IN A SUBSEQUENT YEAR. ☐ NOT ATTEND GRADUATE OR PROFESSIONAL SCHOOL.

19. HAVE YOU APPLIED TO GRADUATE OR PROFESSIONAL SCHOOL?
☐ YES ☐ NO

20. HAVE YOU BEEN ACCEPTED? ☐ YES ☐ NO
IF YES, WHICH UNIVERSITY WILL YOU ATTEND? _____
WHAT WILL BE YOUR FIELD OF STUDY? _____

21. SPECIFY HIGHEST DEGREE SOUGHT AND PROBABLE FIELD OF PROFESSIONAL ACTIVITY. (Examples - Computer Programming; B.S. with subsequent employment; M.A. in Mathematics; M.S. in Electrical Engineering-technical service in industry; PhD - college teaching of Chemistry; M.D. - medical research and teaching.) FILL IN BOTH SIDES TO INDICATE CHANGES IN CAREER PLANS. IF THERE HAS BEEN NO CHANGE, ENTER "SAME" IN AFTER BOX.

BEFORE RESEARCH PARTICIPATION	AFTER RESEARCH PARTICIPATION
	Same

22. PLEASE GIVE A BRIEF DESCRIPTION OF YOUR PROJECT, AND WHAT YOU GAINED FROM THE EXPERIENCE (Feel free to make both positive and negative comments).

[illegible] gas interaction study [illegible]
[illegible] efficacy [illegible] of various [illegible]
+ carbon dioxide [illegible] through
the chromatographic column at various [illegible]
with aid of [illegible] made of mercury [illegible]
[illegible] the product of [illegible]
(i.e. time) plotted vs 1/T. [illegible] enthalpy,
B.E. virial coefficient, and fit to Langmuir-
Taft 3-T potential function [illegible].
[illegible] of high vacuum techniques, [illegible]
[illegible] of the [illegible] adsorption
[illegible] surface on which [illegible] and
studies of surface [illegible] of
[illegible] powders.
Problems encountered in [illegible] for
confidence to [illegible] to directly [illegible]
[illegible]

23. RESEARCH SUPERVISOR'S COMMENTS ON PERFORMANCE AND POTENTIAL OF PARTICIPANT:

Mr. Harley studied the interaction of several gaseous with various solids using a gas chromatographic technique. He was able in the ten weeks to adapt a routine instrument into one capable of carrying out these studies. He helped design and construct a high vacuum apparatus to be used in conjunction with the GC and carried out several preliminary measurements and calculations which indicated the capabilities of the instrumentation. He worked very diligently on this program and showed considerable ability for doing research. He is quite capable intellectually to pursue a research career, is willing to question the things he does not understand and is able to improvise where required.

Budget Bureau No. 99R0128
Approval Expires June 1973

Undergraduate Student Program
PARTICIPANT INFORMATION SHEET

Participant: Answer questions 1 through 22. If "none" is the appropriate answer to any question please indicate "none".

Supervisor: Complete item 23 and submit all forms to project director for checking and submission to National Science Foundation.

PROPOSAL NO. _____ GRANT NO. _____

DATE: SEPT. 1 1973

1. DATE OF BIRTH (month, day, year): 7/9/52

2. SOCIAL SECURITY NO.: 252-92-8212

3. SEX: ☒ MALE ☐ FEMALE

4. MARITAL STATUS: ☐ MARRIED ☒ SINGLE

5. NAME (first, middle, maiden, last): ANTHONY JOSEPH ARDUENGO III

6. ADDRESS OF PERMANENT RESIDENCE (not school address)

P. O. BOX 32484 DECATUR GA. 30030

7. NAME OF SPONSORING INSTITUTION AND PROJECT DIRECTOR

GEORGIA INST. OF TECHNOLOGY
DR. LEON ZAMKOW

8. DEPARTMENT IN WHICH ACTIVITY IS PERFORMED

CHEMISTRY

9. NAME OF INSTITUTION IN WHICH YOU WERE ENROLLED DURING PREVIOUS ACADEMIC YEAR (for summer participants) OR CURRENT ENROLLMENT (for academic year participants)

GEORGIA INST. OF TECHNOLOGY

10. IF ACTIVITY IS NOT PERFORMED AT INSTITUTION AND DEPARTMENT IN ITEMS 7 and 8, GIVE PROJECT LOCATION.

11. NAME OF FACULTY MEMBER SUPERVISING YOUR ACTIVITY IN THIS PROGRAM

DR. EDWARD BURGESS

12. WHAT CLASS WERE YOU IN ON MAY 1, 19 73?

☐ FRESHMAN ☐ SOPHOMORE
☐ JUNIOR ☒ SENIOR ☐ OTHER _____

13. WHEN DO YOU EXPECT TO RECEIVE YOUR DEGREE (month, year)? 6-74

WHICH DEGREE? B.S.

14. WHAT IS YOUR MAJOR FIELD? CHEMISTRY

15. WHAT IS YOUR MINOR FIELD? MATH

16. HISTORY OF PARTICIPATION IN NSF-SUPPORTED UNDERGRADUATE RESEARCH PARTICIPATION AND INDEPENDENT STUDY ACTIVITIES. (Please check YOUR PARTICIPATION EACH PERIOD whether stipend support was provided or not.) IF NO STIPEND WAS PROVIDED PLEASE WRITE "NONE".

☒ SUMMER, 1972	$ 950.00	$	☐ SUMMER, 1974	$	$
☐ FALL TERM, 1972 ☐ WINTER TERM, 1973 ☐ SPRING TERM, 1973	$	$	☐ FALL TERM, 1974 ☐ WINTER TERM, 1975 ☐ SPRING TERM, 1975	$	$
☒ SUMMER, 1973	$ 950.00	$	☐ SUMMER, 1975	$	$
☐ FALL TERM, 1973 ☐ WINTER TERM, 1974 ☐ SPRING TERM, 1974	$	$	☐ FALL TERM, 1975 ☐ WINTER TERM, 1976 ☐ SPRING TERM, 1976	$	$

Note: Place asterisk after appropriate time if "short term" project.

17. OTHER NSF PROGRAMS IN WHICH YOU HAVE PARTICIPATED (indicate program, sponsoring institution, location and dates)

SUMMER 1971 GA. TECH NSF UNDERGRADUATE

18. PLANS AFTER GRADUATION

☐ UNDECIDED ☒ ENTER GRADUATE OR PROFESSIONAL SCHOOL FOLLOWING GRADUATION. ☐ ENTER GRADUATE OR PROFESSIONAL SCHOOL IN A SUBSEQUENT YEAR. ☐ NOT ATTEND GRADUATE OR PROFESSIONAL SCHOOL.

19. HAVE YOU APPLIED TO GRADUATE OR PROFESSIONAL SCHOOL?

☐ YES ☒ NO

20. HAVE YOU BEEN ACCEPTED? ☐ YES ☐ NO

IF YES, WHICH UNIVERSITY WILL YOU ATTEND? _____

WHAT WILL BE YOUR FIELD OF STUDY? _____

21. SPECIFY HIGHEST DEGREE SOUGHT AND PROBABLE FIELD OF PROFESSIONAL ACTIVITY. (Examples - Computer Programming; B.S. with subsequent employment; M.A. in Mathematics; M.S. in Electrical Engineering-technical service in industry; PhD - college teaching of Chemistry; M.D. - medical research and teaching.) FILL IN BOTH SIDES TO INDICATE CHANGES IN CAREER PLANS. IF THERE HAS BEEN NO CHANGE, ENTER "SAME" IN AFTER BOX.

BEFORE RESEARCH PARTICIPATION	AFTER RESEARCH PARTICIPATION
PhD-CHEMISTRY COLLEGE TEACHING OF CHEMISTRY	SAME

22. PLEASE GIVE A BRIEF DESCRIPTION OF YOUR PROJECT, AND WHAT YOU GAINED FROM THE EXPERIENCE (Feel free to make both positive and negative comments).

THE OBJECT OF OUR 1973 NSF SPONSORED SUMMER RESEARCH WAS THE SYNTHESIS OF A FUNCTIONAL GROUP $R_2C{=}S{=}CR_2$, DESIGNATED AS A THIONE YLIDE. THE STABILITY OF SUCH A FUNCTION WOULD BE DEPENDENT ON THE CONTRIBUTIONS OF THE CANONICAL STRUCTURES: $C{=}S{-}C$ $C{-}S^{+}{=}C^{-}$ $C^{-}S^{+}{=}C$. THE CONSIDERATION OF THESE STRUCTURES LED TO THE SELECTION OF A "PUSH-PULL" TYPE SUBSTITUTION. OUR APPROACH HAS BEEN THE INITIAL REACTION AS A NUCLEOPHILIC THIONE WITH AN ALKYLATING AGENT CONTAINING AN ELECTRON WITHDRAWING GROUP. THIS STEP, LEADING TO THE FORMATION OF A SALT IS FOLLOWED BY A DEHYDROHALOGENATION TO GIVE THE THIONE YLIDE WITH THE APPROPIATE SUBSTUTION.

THIS PROGRAM HAS BEEN VERY BENEFICIAL IN FAMILIARIZING ME WITH LABORATORY TECHNIQUES AS WELL AS MODERN SYNTHETIC METHODS AND THEORY. I HAVE ALSO BENEFITED BY A CLOSE WORKING RELATION WITH DR. BURGESS AS WELL AS OTHER FACULTY.

23. RESEARCH SUPERVISOR'S COMMENTS ON PERFORMANCE AND POTENTIAL OF PARTICIPANT:

Mr. Arduengo is without a doubt the most skillful and enthusiastic undergraduate I have had occasion to work with. His performance was excellent and I would expect his potential to be a productive scientist to rate in the top 5% of his age group. He demonstrated ability equivalent to a senior graduate student in executing this research project.

Budget Bureau No. 99RO128
Approval Expires June 1973

Undergraduate Student Program
PARTICIPANT INFORMATION SHEET

Participant: Answer questions 1 through 22. If "none" is the appropriate answer to any question please indicate "none".

Supervisor: Complete item 23 and submit all forms to project director for checking and submission to National Science Foundation.

PROPOSAL NO. _____ GRANT NO. _____

DATE 8/23/73

1. DATE OF BIRTH (month, day, year): 3/5/52

2. SOCIAL SECURITY NO.: 115-44-8536

3. SEX: ☒ MALE ☐ FEMALE

4. MARITAL STATUS: ☐ MARRIED ☒ SINGLE

5. NAME (first, middle, maiden, last): Joseph Paul Cousins

6. ADDRESS OF PERMANENT RESIDENCE (not school address): 146 Florence Ave Rye, N.Y. 10580

7. NAME OF SPONSORING INSTITUTION AND PROJECT DIRECTOR: Georgia Institute of Technology Dr ~~R. Bookman~~ L.H. Zalkow

8. DEPARTMENT IN WHICH ACTIVITY IS PERFORMED: Chemistry

9. NAME OF INSTITUTION IN WHICH YOU WERE ENROLLED DURING PREVIOUS ACADEMIC YEAR (for summer participants) OR CURRENT ENROLLMENT (for academic year participants): LeMoyne College, Syracuse N.Y.

10. IF ACTIVITY IS NOT PERFORMED AT INSTITUTION AND DEPARTMENT IN ITEMS 7 and 8, GIVE PROJECT LOCATION.

11. NAME OF FACULTY MEMBER SUPERVISING YOUR ACTIVITY IN THIS PROGRAM: Dr R. Bookman

12. WHAT CLASS WERE YOU IN ON MAY 1, 19 73 ?
☐ FRESHMAN ☐ SOPHOMORE
☑ JUNIOR ☐ SENIOR ☐ OTHER _____

13. WHEN DO YOU EXPECT TO RECEIVE YOUR DEGREE (month, year)? 5/74
WHICH DEGREE? B.S. Chemistry

14. WHAT IS YOUR MAJOR FIELD? Chemistry

15. WHAT IS YOUR MINOR FIELD? English

16. HISTORY OF PARTICIPATION IN NSF-SUPPORTED UNDERGRADUATE RESEARCH PARTICIPATION AND INDEPENDENT STUDY ACTIVITIES. (Please check YOUR PARTICIPATION EACH PERIOD whether stipend support was provided or not.) IF NO STIPEND WAS PROVIDED PLEASE WRITE "NONE".

☐ SUMMER, 1972	$	$	☐ SUMMER, 1974	$	$
☐ FALL TERM, 1972 ☐ WINTER TERM, 1973 ☐ SPRING TERM, 1973	$	$	☐ FALL TERM, 1974 ☐ WINTER TERM, 1975 ☐ SPRING TERM, 1975	$	$
☑ SUMMER, 1973	$	$ 960	☐ SUMMER, 1975	$	$
☐ FALL TERM, 1973 ☐ WINTER TERM, 1974 ☐ SPRING TERM, 1974	$	$	☐ FALL TERM, 1975 ☐ WINTER TERM, 1976 ☐ SPRING TERM, 1976	$	$

Note: Place asterisk after appropriate time if "short term" project.

17. OTHER NSF PROGRAMS IN WHICH YOU HAVE PARTICIPATED (indicate program, sponsoring institution, location and dates)

None

18. PLANS AFTER GRADUATION
☐ UNDECIDED ☑ ENTER GRADUATE OR PROFESSIONAL SCHOOL FOLLOWING GRADUATION. ☐ ENTER GRADUATE OR PROFESSIONAL SCHOOL IN A SUBSEQUENT YEAR. ☐ NOT ATTEND GRADUATE OR PROFESSIONAL SCHOOL.

19. HAVE YOU APPLIED TO GRADUATE OR PROFESSIONAL SCHOOL?
☐ YES ☑ NO

20. HAVE YOU BEEN ACCEPTED? ☐ YES ☑ NO
IF YES, WHICH UNIVERSITY WILL YOU ATTEND? _____
WHAT WILL BE YOUR FIELD OF STUDY? _____

21. SPECIFY HIGHEST DEGREE SOUGHT AND PROBABLE FIELD OF PROFESSIONAL ACTIVITY. (Examples - Computer Programming; B.S. with subsequent employment; M.A. in Mathematics; M.S. in Electrical Engineering-technical service in industry; PhD - college teaching of Chemistry; M.D. - medical research and teaching.) FILL IN BOTH SIDES TO INDICATE CHANGES IN CAREER PLANS. IF THERE HAS BEEN NO CHANGE, ENTER "SAME" IN AFTER BOX.

BEFORE RESEARCH PARTICIPATION	AFTER RESEARCH PARTICIPATION
Chemistry PhD with Teaching of chemistry	SAME

22. PLEASE GIVE A BRIEF DESCRIPTION OF YOUR PROJECT, AND WHAT YOU GAINED FROM THE EXPERIENCE (Feel free to make both positive and negative comments).

[illegible]

23. RESEARCH SUPERVISOR'S COMMENTS ON PERFORMANCE AND POTENTIAL OF PARTICIPANT:

Joe Cousins has done an excellent job of research with me this summer. He is a very hard worker with tremendous enthusiasm and drive to complete a project and do a good job. He has, I believe, been an inspiration to my whole group, including graduate students and postdoctorals with much more experience. I am confident he has the intellectual and personality traits to succeed as a scientist - Teacher.

Budget Bureau No. 99RO128
Approval Expires June 1973

Undergraduate Student Program
PARTICIPANT INFORMATION SHEET

Participant: Answer questions 1 through 22. If "none" is the appropriate answer to any question please indicate "none".

Supervisor: Complete item 23 and submit all forms to project director for checking and submission to National Science Foundation.

PROPOSAL NO. _____ GRANT NO. _____

DATE 9-4-73

1. DATE OF BIRTH (month, day, year) 7-25-73 ~~7-25-54~~

2. SOCIAL SECURITY NO. 415-92-2493 ~~415-92-2467~~

3. SEX ☒ MALE ☐ FEMALE

4. ~~MARITAL STATUS~~ ☐ MARRIED ☒ SINGLE

5. NAME (first, middle, maiden, last) Gregory Donald Wells ~~Gregory Donald Wells~~

6. ADDRESS OF PERMANENT RESIDENCE (not school address)
1809 Hilmont Drive, Th. H-1, Nashville, Tennessee 37215 ~~1809 Hilmont Drive, Th. H-1, Nashville, Tennessee 37215~~

7. NAME OF SPONSORING INSTITUTION AND PROJECT DIRECTOR
Dr. L. H. Zalkow
Georgia Institute of Technology ~~Georgia Institute of Technology~~

8. DEPARTMENT IN WHICH ACTIVITY IS PERFORMED
Department of Chemistry

9. NAME OF INSTITUTION IN WHICH YOU WERE ENROLLED DURING PREVIOUS ACADEMIC YEAR (for summer participants) OR CURRENT ENROLLMENT (for academic year participants)
Georgia Institute of Technology

10. IF ACTIVITY IS NOT PERFORMED AT INSTITUTION AND DEPARTMENT IN ITEMS 7 and 8, GIVE PROJECT LOCATION.

11. NAME OF FACULTY MEMBER SUPERVISING YOUR ACTIVITY IN THIS PROGRAM
Dr. T. P. Moran

12. WHAT CLASS WERE YOU IN ON MAY 1, 19 ~~73~~ 73?
☐ FRESHMAN ☐ SOPHOMORE
☐ JUNIOR ☐ SENIOR ☐ OTHER _____

13. WHEN DO YOU EXPECT TO RECEIVE YOUR DEGREE (month, year)?
June 1975
WHICH DEGREE?
Bachelor of Science ~~Bachelor of Science~~

14. WHAT IS YOUR MAJOR FIELD?
Chemistry

15. WHAT IS YOUR MINOR FIELD?
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16. HISTORY OF PARTICIPATION IN NSF-SUPPORTED UNDERGRADUATE RESEARCH PARTICIPATION AND INDEPENDENT STUDY ACTIVITIES. (Please check YOUR PARTICIPATION EACH PERIOD whether stipend support was provided or not.) IF NO STIPEND WAS PROVIDED PLEASE WRITE "NONE".

☐ SUMMER, 1972	$	$	☐ SUMMER, 1974	$	$
☐ FALL TERM, 1972 ☐ WINTER TERM, 1973 ☐ SPRING TERM, 1973	$	$	☐ FALL TERM, 1974 ☐ WINTER TERM, 1975 ☐ SPRING TERM, 1975	$	$
☒ SUMMER, 1973	$ 960.00	$	☐ SUMMER, 1975	$	$
☒ FALL TERM, 1973 ☐ WINTER TERM, 1974 ☐ SPRING TERM, 1974	$	$	☐ FALL TERM, 1975 ☐ WINTER TERM, 1976 ☐ SPRING TERM, 1976	$	$

Note: Place asterisk after appropriate time if "short term" project.

17. OTHER NSF PROGRAMS IN WHICH YOU HAVE PARTICIPATED (indicate program, sponsoring institution, location and dates)
None

18. PLANS AFTER GRADUATION
☐ UNDECIDED ☒ ENTER GRADUATE OR PROFESSIONAL SCHOOL FOLLOWING GRADUATION. ☐ ENTER GRADUATE OR PROFESSIONAL SCHOOL IN A SUBSEQUENT YEAR. ☐ NOT ATTEND GRADUATE OR PROFESSIONAL SCHOOL.

19. HAVE YOU APPLIED TO GRADUATE OR PROFESSIONAL SCHOOL?
☐ YES ☒ NO

20. HAVE YOU BEEN ACCEPTED? ☐ YES ☐ NO
IF YES, WHICH UNIVERSITY WILL YOU ATTEND? _____
WHAT WILL BE YOUR FIELD OF STUDY? _____

21. SPECIFY HIGHEST DEGREE SOUGHT AND PROBABLE FIELD OF PROFESSIONAL ACTIVITY. (Examples - Computer Programming; B.S. with subsequent employment; M.A. in Mathematics; M.S. in Electrical Engineering-technical service in industry; PhD - college teaching of Chemistry; M.D. - medical research and teaching.) FILL IN BOTH SIDES TO INDICATE CHANGES IN CAREER PLANS. IF THERE HAS BEEN NO CHANGE, ENTER "SAME" IN AFTER BOX.

BEFORE RESEARCH PARTICIPATION	AFTER RESEARCH PARTICIPATION
Ph. D. in Chemistry - Industrial Research	Same

22. PLEASE GIVE A BRIEF DESCRIPTION OF YOUR PROJECT, AND WHAT YOU GAINED FROM THE EXPERIENCE (Feel free to make both positive and negative comments).

Our project was to determine the cross sections of the charge transfer reactions of C^+ ions incident upon a number of target molecules (CO, Ar, N_2, H_2, O_2) and to examine the behavior of these cross sections as the energy of the incident ion was varied, with regards to existing charge transfer theoretical models. Data was collected on a Bendix Time-of-flight mass spectrometer, modified to detect fast neutral products arising from the charge transfer reactions.

Experience gained from my participation in this project includes knowledge in operating a modern analytical instrument (The Mass Spectrometer) and insight into that particular analytic method; experience in data handling, graphical methods, and error analysis; and a basic understanding of charge transfer reactions.

Negative comments would be concerned with the fact that, because of my limited experience, much of the theoretical aspect of this research was far above my level of understanding, which tended to help keep me in the dark concerning the reasons behind various procedures and, of necessity, to restrict my duties to primarily data collection and reduction.

23. RESEARCH SUPERVISOR'S COMMENTS ON PERFORMANCE AND POTENTIAL OF PARTICIPANT:

Mr. Wells has demonstrated during this summer research program that he has the capabilities necessary for a professional career in industry or graduate school. He was given a difficult problem in gas phase charge transfer reactions and within a short time period he mastered the rather complicated experimental techniques associated with our instrumentation and measured reaction cross sections. The results that he obtained are significant and will be submitted for publication in the Journal of Chemical Physics. This research has provided impetus for his self-study of quantum mechanics and has anticipated some of his formal course work and in this respect has provided a valued educational experience for him.

Budget Bureau No. 99R0128
Approval Expires June 1973

Undergraduate Student Program
PARTICIPANT INFORMATION SHEET

Participant: Answer questions 1 through 22. If "none" is the appropriate answer to any question please indicate "none".

Supervisor: Complete item 23 and submit all forms to project director for checking and submission to National Science Foundation.

PROPOSAL NO. _____ GRANT NO. _____

DATE

1. DATE OF BIRTH (month, day, year): 7/2/53

2. SOCIAL SECURITY NO.: 002-42-7728

3. SEX: ☑ MALE ☐ FEMALE

4. MARITAL STATUS: ☐ MARRIED ☑ SINGLE

5. NAME (first, middle, maiden, last): Christopher Kent VanCantfort

6. ADDRESS OF PERMANENT RESIDENCE (not school address): Ga. Tech P.O. Box 35165 Atlanta, Ga. 30332

7. NAME OF SPONSORING INSTITUTION AND PROJECT DIRECTOR: Ga. Tech — Dr. L.H. Zalkow

8. DEPARTMENT IN WHICH ACTIVITY IS PERFORMED: Chemistry

9. NAME OF INSTITUTION IN WHICH YOU WERE ENROLLED DURING PREVIOUS ACADEMIC YEAR (for summer participants) OR CURRENT ENROLLMENT (for academic year participants): Ga. Instit. of Technology

10. IF ACTIVITY IS NOT PERFORMED AT INSTITUTION AND DEPARTMENT IN ITEMS 7 and 8, GIVE PROJECT LOCATION.

11. NAME OF FACULTY MEMBER SUPERVISING YOUR ACTIVITY IN THIS PROGRAM: Dr. L.H. Zalkow

12. WHAT CLASS WERE YOU IN ON MAY 1, 19 73?
☐ FRESHMAN ☑ SOPHOMORE
☐ JUNIOR ☐ SENIOR ☐ OTHER _____

13. WHEN DO YOU EXPECT TO RECEIVE YOUR DEGREE (month, year)? July 1975
WHICH DEGREE? B.S. Chem

14. WHAT IS YOUR MAJOR FIELD? Chemistry

15. WHAT IS YOUR MINOR FIELD? None

16. HISTORY OF PARTICIPATION IN NSF-SUPPORTED UNDERGRADUATE RESEARCH PARTICIPATION AND INDEPENDENT STUDY ACTIVITIES. (Please check YOUR PARTICIPATION EACH PERIOD whether stipend support was provided or not.) IF NO STIPEND WAS PROVIDED PLEASE WRITE "NONE".

☐ SUMMER, 1972	$ _____	$ _____	☐ SUMMER, 1974	$ _____	$ _____
☐ FALL TERM, 1972 ☐ WINTER TERM, 1973 ☐ SPRING TERM, 1973	$ _____	$ _____	☐ FALL TERM, 1974 ☐ WINTER TERM, 1975 ☐ SPRING TERM, 1975	$ _____	$ _____
☑ SUMMER, 1973	$ 960.00	$ _____	☐ SUMMER, 1975	$ _____	$ _____
☐ FALL TERM, 1973 ☐ WINTER TERM, 1974 ☐ SPRING TERM, 1974	$ _____	$ _____	☐ FALL TERM, 1975 ☐ WINTER TERM, 1976 ☐ SPRING TERM, 1976	$ _____	$ _____

Note: Place asterisk after appropriate time if "short term" project.

17. OTHER NSF PROGRAMS IN WHICH YOU HAVE PARTICIPATED (indicate program, sponsoring institution, location and dates): NONE

18. PLANS AFTER GRADUATION
☐ UNDECIDED ☑ ENTER GRADUATE OR PROFESSIONAL SCHOOL FOLLOWING GRADUATION. ☐ ENTER GRADUATE OR PROFESSIONAL SCHOOL IN A SUBSEQUENT YEAR. ☐ NOT ATTEND GRADUATE OR PROFESSIONAL SCHOOL.

19. HAVE YOU APPLIED TO GRADUATE OR PROFESSIONAL SCHOOL?
☐ YES ☑ NO

20. HAVE YOU BEEN ACCEPTED? ☐ YES ☑ NO
IF YES, WHICH UNIVERSITY WILL YOU ATTEND? _____
WHAT WILL BE YOUR FIELD OF STUDY? _____

21. SPECIFY HIGHEST DEGREE SOUGHT AND PROBABLE FIELD OF PROFESSIONAL ACTIVITY. (Examplas - Computer Programming; B.S. with subsequent employment; M.A. in Mathematics; M.S. in Electrical Engineering-technical service in industry; PhD - college teaching of Chemistry; M.D. - medical research and teaching.) FILL IN BOTH SIDES TO INDICATE CHANGES IN CAREER PLANS. IF THERE HAS BEEN NO CHANGE, ENTER "SAME" IN AFTER BOX.

BEFORE RESEARCH PARTICIPATION	AFTER RESEARCH PARTICIPATION
AD — Chemistry — Research & teaching	SAME

22. PLEASE GIVE A BRIEF DESCRIPTION OF YOUR PROJECT, AND WHAT YOU GAINED FROM THE EXPERIENCE
(Feel free to make both positive and negative comments).

23. RESEARCH SUPERVISOR'S COMMENTS ON PERFORMANCE AND POTENTIAL OF PARTICIPANT:

Budget Bureau No. 99R0128
Approval Expires June 1973

Undergraduate Student Program
PARTICIPANT INFORMATION SHEET

Participant: Answer questions 1 through 22. If "none" is the appropriate answer to any question please indicate "none".

Supervisor: Complete item 23 and submit all forms to project director for checking and submission to National Science Foundation.

PROPOSAL NO. _____ GRANT NO. _____

DATE: 27 August 1973

1. DATE OF BIRTH (month, day, year): 7-14-52

2. SOCIAL SECURITY NO.: 252-90-2705

3. SEX: ☒ MALE ☐ FEMALE

4. MARITAL STATUS: ☒ MARRIED ☐ SINGLE

5. NAME (first, middle, maiden, last): Mark Oliver Lively, III

6. ADDRESS OF PERMANENT RESIDENCE (not school address): 1460 East Rock Springs Rd. Apt. 1, Atlanta, Ga 30306

7. NAME OF SPONSORING INSTITUTION AND PROJECT DIRECTOR: Georgia Inst. of Technology

8. DEPARTMENT IN WHICH ACTIVITY IS PERFORMED: Chemistry

9. NAME OF INSTITUTION IN WHICH YOU WERE ENROLLED DURING PREVIOUS ACADEMIC YEAR (for summer participants) OR CURRENT ENROLLMENT (for academic year participants): Georgia Inst of Techology

10. IF ACTIVITY IS NOT PERFORMED AT INSTITUTION AND DEPARTMENT IN ITEMS 7 and 8, GIVE PROJECT LOCATION: ~

11. NAME OF FACULTY MEMBER SUPERVISING YOUR ACTIVITY IN THIS PROGRAM: James C Powers

12. WHAT CLASS WERE YOU IN ON MAY 1, 19 72 ?
☐ FRESHMAN ☐ SOPHOMORE
☒ JUNIOR ☐ SENIOR ☐ OTHER _____

13. WHEN DO YOU EXPECT TO RECEIVE YOUR DEGREE (month, year)? March 1973
WHICH DEGREE? B.S.

14. WHAT IS YOUR MAJOR FIELD? Chemistry

15. WHAT IS YOUR MINOR FIELD? none

16. HISTORY OF PARTICIPATION IN NSF-SUPPORTED UNDERGRADUATE RESEARCH PARTICIPATION AND INDEPENDENT STUDY ACTIVITIES. (Please check YOUR PARTICIPATION EACH PERIOD whether stipend support was provided or not.) IF NO STIPEND WAS PROVIDED PLEASE WRITE "NONE".

☐ SUMMER, 1972	$	$	☐ SUMMER, 1974	$	$
☐ FALL TERM, 1972 ☐ WINTER TERM, 1973 ☐ SPRING TERM, 1973	$	$	☐ FALL TERM, 1974 ☐ WINTER TERM, 1975 ☐ SPRING TERM, 1975	$	$
☒ SUMMER, 1973	$ 960	$	☐ SUMMER, 1975	$	$
☐ FALL TERM, 1973 ☐ WINTER TERM, 1974 ☐ SPRING TERM, 1974	$	$	☐ FALL TERM, 1975 ☐ WINTER TERM, 1976 ☐ SPRING TERM, 1976	$	$

Note: Place asterisk after appropriate time if "short term" project.

17. OTHER NSF PROGRAMS IN WHICH YOU HAVE PARTICIPATED (indicate program, sponsoring institution, location and dates): None

18. PLANS AFTER GRADUATION
☐ UNDECIDED ☐ ENTER GRADUATE OR PROFESSIONAL SCHOOL FOLLOWING GRADUATION. ☒ ENTER GRADUATE OR PROFESSIONAL SCHOOL IN A SUBSEQUENT YEAR. ☐ NOT ATTEND GRADUATE OR PROFESSIONAL SCHOOL.

19. HAVE YOU APPLIED TO GRADUATE OR PROFESSIONAL SCHOOL?
☐ YES ☒ NO

20. HAVE YOU BEEN ACCEPTED? ☐ YES ☒ NO
IF YES, WHICH UNIVERSITY WILL YOU ATTEND? _____
WHAT WILL BE YOUR FIELD OF STUDY? _____

21. SPECIFY HIGHEST DEGREE SOUGHT AND PROBABLE FIELD OF PROFESSIONAL ACTIVITY. (Examples - Computer Programming; B.S. with subsequent employment; M.A. in Mathematics; M.S. in Electrical Engineering-technical service in industry; PhD - college teaching of Chemistry; M.D. - medical research and teaching.) FILL IN BOTH SIDES TO INDICATE CHANGES IN CAREER PLANS. IF THERE HAS BEEN NO CHANGE, ENTER "SAME" IN AFTER BOX.

BEFORE RESEARCH PARTICIPATION	AFTER RESEARCH PARTICIPATION
Ph.D. Chemistry research	same

22. PLEASE GIVE A BRIEF DESCRIPTION OF YOUR PROJECT, AND WHAT YOU GAINED FROM THE EXPERIENCE
(Feel free to make both positive and negative comments).

My project was in the field of Biochemistry. The project dealt with the kinetics of inactivation of the enzyme Subtilisin BPN' by a class of irreversible inhibitors known as peptide chloromethyl ketones. Each inhibitor of a series of inhibitors of varying amino acid structure was reacted with subtilisin and the rate of inactivation was determined using a pH-Stat measuring residual enzyme activity. A computer program was used to calculate the appropriate kinetics constants from the pH-Stat data. The varying reaction rates ~~of~~ were compared with respect to the varying amino acid structure and related to the subsite specificity of the enzyme. Mono-, di-, tri-, and tetra-peptides were investigated. The large mapority of inhibitors were available to me, having been previously prepared. I was required to synthesize one of the tetra-peptides in the course of my work.

I found the work to be very interesting and the experience I gained from working with Dr. Powers should be very helpful to me in the future. The program allowed me to learn what graduate school will be like.

23. RESEARCH SUPERVISOR'S COMMENTS ON PERFORMANCE AND POTENTIAL OF PARTICIPANT:

Mark Lively Performed an excellent piece of research this summer which will result in one publication. He has a very mature approach to laboratory work and is able to proceed with a considerable degree of independence. He is also one of the most inquisitive undergraduate students whom I have been associated with. His penetrating questions show interest and the desire to learn more about biochemistry. He certainly has sufficient potential to earn the Ph.D. degree.

Budget Bureau No. 99RO128
Approval Expires June 1973

Undergraduate Student Program

PARTICIPANT INFORMATION SHEET

Participant: Answer questions 1 through 22. If "none" is the appropriate answer to any question please indicate "none".

Supervisor: Complete item 23 and submit all forms to project director for checking and submission to National Science Foundation.

PROPOSAL NO. _____ GRANT NO. _____

DATE 8-28-73

1. DATE OF BIRTH (month, day, year): 4-15-52

2. SOCIAL SECURITY NO.: 260744491

3. SEX: ☐ MALE ☑ FEMALE

4. MARITAL STATUS: ☐ MARRIED ☑ SINGLE

5. NAME (first, middle, maiden, last): Mary Emilie Scott

6. ADDRESS OF PERMANENT RESIDENCE (not school address)

948 Nerdover Dr. N.E. Atlanta, Georgia 30319

7. NAME OF SPONSORING INSTITUTION AND PROJECT DIRECTOR

Ga. Tech Dr. L. Zalkow ~~Dr. H.A. Flaschka~~

8. DEPARTMENT IN WHICH ACTIVITY IS PERFORMED: Chemistry Department

9. NAME OF INSTITUTION IN WHICH YOU WERE ENROLLED DURING PREVIOUS ACADEMIC YEAR (for summer participants) OR CURRENT ENROLLMENT (for academic year participants)

Ga. Tech

10. IF ACTIVITY IS NOT PERFORMED AT INSTITUTION AND DEPARTMENT IN ITEMS 7 and 8, GIVE PROJECT LOCATION.

11. NAME OF FACULTY MEMBER SUPERVISING YOUR ACTIVITY IN THIS PROGRAM: Dr. H.A. Flaschka

12. WHAT CLASS WERE YOU IN ON MAY 1, 1973?

☐ FRESHMAN ☐ SOPHOMORE
☐ JUNIOR ☐ SENIOR ☐ OTHER _____

13. WHEN DO YOU EXPECT TO RECEIVE YOUR DEGREE (month, year)? June 1974

WHICH DEGREE? B.S. in Chemistry

14. WHAT IS YOUR MAJOR FIELD? Chemistry

15. WHAT IS YOUR MINOR FIELD? None

16. HISTORY OF PARTICIPATION IN NSF-SUPPORTED UNDERGRADUATE RESEARCH PARTICIPATION AND INDEPENDENT STUDY ACTIVITIES. (Please check YOUR PARTICIPATION EACH PERIOD whether stipend support was provided or not.) IF NO STIPEND WAS PROVIDED PLEASE WRITE "NONE".

NONE

☐ SUMMER, 1972	$	$	☐ SUMMER, 1974	$	$
☐ FALL TERM, 1972 ☐ WINTER TERM, 1973 ☐ SPRING TERM, 1973	$	$	☐ FALL TERM, 1974 ☐ WINTER TERM, 1975 ☐ SPRING TERM, 1975	$	$
☐ SUMMER, 1973	$	$	☐ SUMMER, 1975	$	$
☐ FALL TERM, 1973 ☐ WINTER TERM, 1974 ☐ SPRING TERM, 1974	$	$	☐ FALL TERM, 1975 ☐ WINTER TERM, 1976 ☐ SPRING TERM, 1976	$	$

Note: Place asterisk after appropriate time if "short term" project.

17. OTHER NSF PROGRAMS IN WHICH YOU HAVE PARTICIPATED (Indicate program, sponsoring institution, location and dates)

None

18. PLANS AFTER GRADUATION

☐ UNDECIDED ☐ ENTER GRADUATE OR PROFESSIONAL SCHOOL FOLLOWING GRADUATION. ☐ ENTER GRADUATE OR PROFESSIONAL SCHOOL IN A SUBSEQUENT YEAR. ☐ NOT ATTEND GRADUATE OR PROFESSIONAL SCHOOL.

19. HAVE YOU APPLIED TO GRADUATE OR PROFESSIONAL SCHOOL?

☐ YES ☐ NO

20. HAVE YOU BEEN ACCEPTED? ☐ YES ☐ NO

IF YES, WHICH UNIVERSITY WILL YOU ATTEND? _____

WHAT WILL BE YOUR FIELD OF STUDY? _____

21. SPECIFY HIGHEST DEGREE SOUGHT AND PROBABLE FIELD OF PROFESSIONAL ACTIVITY. (Examples - Computer Programming; B.S. with subsequent employment; M.A. in Mathematics; M.S. in Electrical Engineering-technical service in industry; PhD - college teaching of Chemistry; M.D. - medical research and teaching.) FILL IN BOTH SIDES TO INDICATE CHANGES IN CAREER PLANS. IF THERE HAS BEEN NO CHANGE, ENTER "SAME" IN AFTER BOX.

BEFORE RESEARCH PARTICIPATION	AFTER RESEARCH PARTICIPATION
Research in chemistry - ph D	Same

22. PLEASE GIVE A BRIEF DESCRIPTION OF YOUR PROJECT, AND WHAT YOU GAINED FROM THE EXPERIENCE (Feel free to make both positive and negative comments).

My project involved the analysis of certain metal complexes of very low concentrations. In the first step of the analysis the technique of solid extraction was used to enrich the metal complex into a much more concentrated form. Solid extraction employs a solvent that can be solidified after the extraction step, thus making phase withdrawal easy. After this enrichment pretreatment the metal complex was then analyzed spectrophotometrically. One instrument used for this purpose was a Spectronic 20 spectrophotometer with a cell compartment modified so that only about 1.5 ml of liquid is needed for a measurement. Thus, the enrichment factor is maintained throughout the analysis. Another instrument used was a long path-length spectrophotometer built by Flaschka and coworkers. This uses a cell compartment which is 20 or 40 cm in length, thus affording readings on substances of extremely low concentration. A third instrument was used was a Spectronic 505 spectrophotometer, which gives absorbance readings over a large spectrum of wavelengths.

From my experience this summer I felt like I developed more assurance for doing lab work. I also had a chance to think independently about my research problem and arrive at some solutions of my own. This allows one to get a very good idea of what it might be like to be a graduate student doing research in chemistry.

23. RESEARCH SUPERVISOR'S COMMENTS ON PERFORMANCE AND POTENTIAL OF PARTICIPANT:

Miss Scott showed great interest in lab work and spent actually more time in the lab than required by "contract". She quickly grasped the basic ideas or problems and could well adapt to various approaches and changes as they seemed necessary during the progress of the investigation. She is resourceful in finding ways and means to achieve results. Her ability to express herself in writing and speaking is well above average and help greatly in communicating about the research.

Budget Bureau No. 99R0128
Approval Expires June 1973

Undergraduate Student Program
PARTICIPANT INFORMATION SHEET

Participant: Answer questions 1 through 22. If "none" is the appropriate answer to any question please indicate "none".

Supervisor: Complete item 23 and submit all forms to project director for checking and submission to National Science Foundation.

PROPOSAL NO. _____ GRANT NO. _____

DATE: August 24, 1973

1. DATE OF BIRTH (month, day, year): April 24, 1952

2. SOCIAL SECURITY NO.: 417-74-1703

3. SEX: ☒ MALE ☐ FEMALE

4. MARITAL STATUS: ☐ MARRIED ☒ SINGLE

5. NAME (first, middle, maiden, last): James Edward Graham

6. ADDRESS OF PERMANENT RESIDENCE (not school address)

1547 Hall Ave. Gardendale, Alabama 35071

7. NAME OF SPONSORING INSTITUTION AND PROJECT DIRECTOR

Georgia Institute of Technology, Dr. Leon H. Zalkow

8. DEPARTMENT IN WHICH ACTIVITY IS PERFORMED

Chemistry

9. NAME OF INSTITUTION IN WHICH YOU WERE ENROLLED DURING PREVIOUS ACADEMIC YEAR (for summer participants) OR CURRENT ENROLLMENT (for academic year participants)

Georgia Institute of Technology

10. IF ACTIVITY IS NOT PERFORMED AT INSTITUTION AND DEPARTMENT IN ITEMS 7 and 8, GIVE PROJECT LOCATION.

11. NAME OF FACULTY MEMBER SUPERVISING YOUR ACTIVITY IN THIS PROGRAM

Dr. J. Aaron Bertrand

12. WHAT CLASS WERE YOU IN ON MAY 1, 1973?

☐ FRESHMAN ☐ SOPHOMORE
☐ JUNIOR ☒ SENIOR ☐ OTHER _____

13. WHEN DO YOU EXPECT TO RECEIVE YOUR DEGREE (month, year)? March, 1974

WHICH DEGREE? B. S.

14. WHAT IS YOUR MAJOR FIELD? Chemistry

15. WHAT IS YOUR MINOR FIELD? None

16. HISTORY OF PARTICIPATION IN NSF-SUPPORTED UNDERGRADUATE RESEARCH PARTICIPATION AND INDEPENDENT STUDY ACTIVITIES. (Please check YOUR PARTICIPATION EACH PERIOD whether stipend support was provided or not.) IF NO STIPEND WAS PROVIDED PLEASE WRITE "NONE".

☐ SUMMER, 1972	$ _____	$ _____	☐ SUMMER, 1974	$ _____	$ _____
☐ FALL TERM, 1972 ☐ WINTER TERM, 1973 ☐ SPRING TERM, 1973	$ _____	$ _____	☐ FALL TERM, 1974 ☐ WINTER TERM, 1975 ☐ SPRING TERM, 1975	$ _____	$ _____
☒ SUMMER, 1973	$ 960	$ _____	☐ SUMMER, 1975	$ _____	$ _____
☐ FALL TERM, 1973 ☐ WINTER TERM, 1974 ☐ SPRING TERM, 1974	$ _____	$ _____	☐ FALL TERM, 1975 ☐ WINTER TERM, 1976 ☐ SPRING TERM, 1976	$ _____	$ _____

Note: Place asterisk after appropriate time if "short term" project.

17. OTHER NSF PROGRAMS IN WHICH YOU HAVE PARTICIPATED (indicate program, sponsoring institution, location and dates)

NSF-SSTP, Loyola University, New Orleans, Louisiana
Summer, 1969

18. PLANS AFTER GRADUATION

☐ UNDECIDED ☒ ENTER GRADUATE OR PROFESSIONAL SCHOOL FOLLOWING GRADUATION. ☐ ENTER GRADUATE OR PROFESSIONAL SCHOOL IN A SUBSEQUENT YEAR. ☐ NOT ATTEND GRADUATE OR PROFESSIONAL SCHOOL.

19. HAVE YOU APPLIED TO GRADUATE OR PROFESSIONAL SCHOOL?

☐ YES ☒ NO

20. HAVE YOU BEEN ACCEPTED? ☐ YES ☒ NO

IF YES, WHICH UNIVERSITY WILL YOU ATTEND? _____

WHAT WILL BE YOUR FIELD OF STUDY? _____

21. SPECIFY HIGHEST DEGREE SOUGHT AND PROBABLE FIELD OF PROFESSIONAL ACTIVITY. (Examples - Computer Programming; B.S. with subsequent employment; M.A. in Mathematics; M.S. in Electrical Engineering-technical service in industry; PhD - college teaching of Chemistry; M.D. - medical research and teaching.) FILL IN BOTH SIDES TO INDICATE CHANGES IN CAREER PLANS. IF THERE HAS BEEN NO CHANGE, ENTER "SAME" IN AFTER BOX.

BEFORE RESEARCH PARTICIPATION	AFTER RESEARCH PARTICIPATION
Ph. D. Industrial or teaching Chemistry	Same

22. PLEASE GIVE A BRIEF DESCRIPTION OF YOUR PROJECT, AND WHAT YOU GAINED FROM THE EXPERIENCE (feel free to make both positive and negative comments).

Preparation and studies of various oxygen bridged transistion metal complexes. Included are Magnetic studies, molecular weight studies Infrared spectroscopy and X-ray methods.

I have learned a lot about these particular compounds but I feel that the most important things I have learned the's summer ave how research is actually undertaken and what is involved in pursuing research as a career.

23. RESEARCH SUPERVISOR'S COMMENTS ON PERFORMANCE AND POTENTIAL OF PARTICIPANT:

Jimmy Graham has been a very enthusiastic worker this Summer and he has exhibited considerable maturity in handling his research problem. He has demonstrated a good background understanding of Chemistry and he gained considerable self-confidence this Summer.

NATIONAL SCIENCE FOUNDATION
WASHINGTON, D.C. 20550

Budget Bureau No. 99-R0261

UNDERGRADUATE RESEARCH PARTICIPATION PROGRAMS STATUS REPORT

INSTITUTION	PROPOSAL NUMBER	GRANT NUMBER	DIRECTOR'S NAME
Georgia Institute of Technology		GY-10277	Leon H. Zalkow

ADDRESS	DATE OF ACTIVITY	DISCIPLINE
School of Chemistry Atlanta, Georgia 30332	TO: 9-7-73 FROM: 6-11-73	Chemistry

NUMBER OF PARTICIPANTS PROVIDED BY THE GRANT 8
NUMBER OF PARTICIPANTS IN THE PROJECT 8

ADDITIONAL PARTICIPANTS SUPPORTED BY: (a) GRANT FUNDS _____ (b) OTHER SOURCES _____

PARTICIPANT ROSTER

NAME AND HOME ADDRESS	HOME INSTITUTION AND ADDRESS	CLASS AS OF MAY 1 CURRENT YEAR	RESEARCH TOPIC	RESEARCH SUPERVISOR
A. J. Arduengo 2847 Reveille Cir.,SE Atlanta, Ga.	Ga. Institute of Tech. School of Chemistry Atlanta, Ga. 30332	Senior	A Search for New Functional Groups Containing Sulphur.	E. M. Burgess
James E. Graham Ga. Tech Box 32189 Atlanta, Ga. 30332	Ga. Institute of Tech. School of Chemistry Atlanta, Ga. 30332	Senior	Polynuclear Complexes with Oxygen Bridges	J. A. Bertrand
Arnold D. Farley 1617-B N-Ashley Valdosta, Ga. 31601	Valdosta State College Valdosta, Georgia	Senior	A Study of Gas-Solid Interactions	R. A. Pierotti
Mark O. Lively, III 2704 Glenbrier Dr.,NE Atlanta, Ga. 30345	Ga. Institute of Tech. School of Chemistry Atlanta, Ga. 30332	Junior	Enzyme Engineering	J. C. Powers
Mary E. Scott Ga. Tech Box 35358 Atlanta, Georgia 30332	Ga. Institute of Tech. School of Chemistry Atlanta, Ga. 30332	Senior	Titrimetric & Photometric Methods	H. A. Flaschka
Gregory D. Wells Ga. Tech Box 36058 Atlanta, Ga. 30332	Ga. Institute of Tech School of Chemistry Atlanta, Ga. 30332	Junior	Collisions of High Energy Ions to Molecules	T. F. Moran

DATE	DIRECTOR'S SIGNATURE
June 12, 1973	

NSF Form 541, Apr. 72

(Use additional pages as necessary) Page 1 of 2 Pages

WASHINGTON, D.C. 20550

UNDERGRADUATE RESEARCH PARTICIPATION PROGRAMS STATUS REPORT

INSTITUTION	PROPOSAL NUMBER	GRANT NUMBER	DIRECTOR'S NAME
Georgia Institute of Technology		GY-10577	Leon H. Zalkow

ADDRESS	DATE OF ACTIVITY	DISCIPLINE
School of Chemistry Atlanta, Georgia 30332	TO: 9-7-73 FROM: 6-11-73	Chemistry

NUMBER OF PARTICIPANTS PROVIDED BY THE GRANT 3
NUMBER OF PARTICIPANTS IN THE PROJECT 3

ADDITIONAL PARTICIPANTS SUPPORTED BY: (a) GRANT FUNDS _____ (b) OTHER SOURCES _____

PARTICIPANT ROSTER

NAME AND HOME ADDRESS	HOME INSTITUTION AND ADDRESS	CLASS AS OF MAY 1 CURRENT YEAR	RESEARCH TOPIC	RESEARCH SUPERVISOR
Joseph P. Cousins 146 Florence Ave. Rye, New York 10580	Le Moyne College Syracuse, N. Y.	Senior	Physico-Chemical Basis of Cataract Formation in Human Lenses	R. F. Borkman
C. K. Van Cantfort Ga. Tech Box 35165 Atlanta, Ga.	Ga. Institute of Tech. School of Chemistry Atlanta, Ga. 30332	Sophomore	Insect Sex Attractants and Related Substances	L. H. Zalkow

DATE	DIRECTOR'S SIGNATURE
June 12, 1973	

NSF Form 541, Apr. 72

(Use additional pages as necessary) Page 2 of 2 Pages

Faculty-Supervisor Comments On

NSF Undergraduate Summer Participants 1973

ANTHONY JOSEPH ARDUENGO III - Dr. Edward Burgess

Mr. Arduengo is without a doubt the most skillful and enthusiastic undergraduate I have had occasion to work with. His performance was excellent and I would expect his potential to be a productive scientist to rate in the top 5% of his age group. He demonstrated ability equivalent to a senior graduate student in executing this research project.

JOSEPH PAUL COUSINS - Dr. R. Borkman

Joe Cousins has done an excellent job of research with me this summer. He is a very hard worker with tremendous enthusiasm and drive to complete a project and do a good job. He has, I believe, been an inspiration to my whole group, including graduate students and postdoctorals with much more experience. I am confident he has the intellectual and personality traits to succeed as a scientist-teacher.

GREGORY DONALD WELLS - Dr. T. F. Moran

Mr. Wells has demonstrated during this summer research program that he has the capabilities necessary for a professional career in industry or graduate school. He was given a difficult problem in gas phase charge transfer reactions and within a short time period he mastered the rather complicated experimental techniques associated with our instrumentation and measured reaction cross sections. The results that he obtained are significant and will be submitted for publication in the Journal of Chemical Physics. This research has provided impetus for his self-study of quantum mechanics and has anticipated some of his formal course work and in this respect has provided a valued educational experience for him.

CHRISTOPHER KENT VANCANTFORT - Dr. L. H. Zalkow

Mr. Van Cantfort's performance as a participant in the Undergraduate NSF Summer Research Program was comparable to that of my second year graduate students! That is, his performance was very good, his judgement was mature and I was extremely impressed.

MARK OLIVER LIVELY, III - Dr. James C. Powers

Mark Lively performed an excellent piece of research this summer which will result in one publication. He has a very mature approach to laboratory work and is able to proceed with a considerable degree of independence. He is also one of the most inquisitive undergraduate students whom I have been associated with. His penetrating questions show interest and the desire to learn more about biochemistry. He certainly has sufficient potential to earn the Ph.D. degree.

MARY EMILIE SCOTT - Dr. H. A. Flaschka

Miss Scott showed great interest in her work and spent actually more time in the lab than required by "contract." She quickly grasped the basic ideas of problems and could well adapt to various approaches and changes as they seemed necessary during the progress of the investigations. She is resourceful in finding ways and means to achieve results. Her ability to express herself in writing and speaking is well above average and help greatly in communicating about the research.

JAMES EDWARD GRAHAM - Dr. J. Aaron Bertrand

Jimmy Graham has been a very enthusiastic worker this Summer and he has exhibited considerable maturity in handling his research problem. He has demonstrated a good background understanding of Chemistry and he gained considerable self-confidence this Summer.

ARNOLD DALE HARLEY - Dr. Robert A. Pierotti

Mr. Harley studied the interaction of several gaseous with various solids using a gas chromatographic technique. He was able in the ten weeks to adapt a routine instrument into one capable of carrying out these studies. He helped design and construct a high vacuum apparatus to be used in conjunction with the GC and carried out several preliminary measurements and calculations which indicated the capabilities of the instrumentation. He worked very diligently on this program and showed considerable ability for doing research. He is quite capable intellectually to pursue a research career, is willing to question the things he does not understand and is able to improvise where required.